

REMARKS

Applicants would like to thank the Examiner for the detailed Official Action provided and for the acknowledgment of Applicants' Claim for Priority and Receipt of the certified copy of the priority documents in the Official Action.

Applicants additionally wish to thank the Examiner for considering the materials cited in the Information Disclosure Statement filed in the present application on December 8, 2006, by the return of the signed and initialed Form PTO-1449 attached to the above-noted Information Disclosure Statement.

Upon entry of the present paper, claims 1, 5, 6, 8, 11 and 16 will have been amended. Claim 2 will have been canceled without prejudice or disclaimer. Claims 1 and 3-16 are pending for consideration by the Examiner. Applicants respectfully request reconsideration and withdrawal of the outstanding objections and rejections of the claims pending in the present application. Such action is respectfully requested and is now believed to be appropriate.

Objection to the Drawings

In the outstanding Official Action, the Examiner objected to the drawings asserting that Fig. 35 be labeled "Prior Art." By the present response, Applicants have submitted a replacement sheet of drawings in which Fig. 35 has been amended to include the "Prior Art" designation, thereby obviating the Examiner's objection. Accordingly, the objection is now believed to be moot and should be withdrawn.

Objections to the Claims

The Examiner has objected to claim 2, 5, 6, 8, 15 and 16 for informalities. Without agreeing to the propriety of the Examiner's objections and solely to expedite the

examination process, Applicants have amended claims 1, 5, 6, 8, 11 and 16 to eliminate any possible basis for the claim objections to claims 5, 6, 8, 15 and 16. Further, claim 2 has been canceled without prejudice or disclaimer. Accordingly, the objections are believed to now be moot and should be withdrawn.

Indefiniteness Rejection Under 35 USC §112, 2nd Paragraph

In the outstanding Official Action, the Examiner has rejected claim 11 under 35 U.S.C. §112, 2nd paragraph. The Examiner asserts that these claims are indefinite for failing to particularly point out the distinctly claimed subject matter which Applicants regard as their invention.

In particular, the Examiner asserts that in claim 11, the limitation “said electrode wiring” lacks antecedent basis. Applicants respectfully submit that the above claim limitation is readily understood by those having ordinary skill in the art. However, without agreeing to the propriety of the Examiner’s rejection and solely to expedite the examination process, Applicants have amended claim 11. It is thus respectfully requested that the Examiner withdraw the rejection of the claims under 35 USC 112, 2nd paragraph.

Obviousness Rejections under 35 USC §103(a)

The Examiner has rejected claims 1-16 under 35 USC §103(a) as being unpatentable over KIM et. al., (U.S. Pat. No. 6,915,693) in view of HASEGAWA (5,559,291), and DURANTE et al., (U.S. Pat. No. 6,928,872).

Applicants respectfully traverse the obviousness rejections and request withdrawal of the rejections in view of the following remarks.

For an obviousness rejection under §103(a) to be proper, the Examiner must indicate that each limitation is shown or provide at least a clear articulated reason for

rendering the claimed invention obvious. Thus, it is respectfully submitted that KIM, either alone or in any proper combination with HASEGAWA and DURANTE, fails to teach or render obvious the combination of claimed features in at least independent claim 1.

In this regard, independent claim 1 generally recites, *inter alia*, a gyro sensor including a primary base plate formed of a semiconductor substrate and provided with a detection mass body, a driven mass body and a detecting element, said detection mass body being displaceably supported relative to a support base plate in a plane along said support base plate through at least two detection springs having one end fixed to said support base plate. The driven mass body is connected to said detection mass body through a drive spring and configured to vibrate in a direction intersecting said support base plate. The detecting element is configured to detect a displacement amount of said detection mass body in the plane along said support base plate, wherein said detection spring extends from said detection mass body in only one direction along said support base plate so as to support said detection mass body relative to said support base plate in a cantilever manner. The at least two detection springs each extend from said detection mass body in said only one direction and have flexibility in a displacement direction of said detection mass body, wherein respective distal ends of said at least two detection springs are connected to one another continuously and integrally through a coupling segment, said coupling segment having an intermediate portion fixed to said support base plate.

In contrast, KIM generally discloses a gyroscope having a first mass 151 surrounding a second mass 152, wherein the first and second masses are fixed together by

first springs 261. The second mass 152 is fixed to a substrate by second springs 262. When an angular velocity is applied to the first mass 151 in an X direction, the first and second masses move together in the Y-direction since they are fixed together with the first springs 261. In this particular configuration, a capacitance of a horizontal sensing electrode is changed. *See* col. 6, lines 7-39; *see also* Fig. 10.

HASEGAWA generally discloses an angular velocity sensor including a single support beam 15 having a first vibratory member 14, and a second support beam 17 having a second vibratory member 16. The second vibratory member 16 is horizontally supported on the first vibratory member 14 by the second support beam 17. *See* Fig. 1; *see also* col. 4, lines 56 through col. 5, line 20. This particular configuration, i.e., a sensor having two support beams 15, 17, eliminates drawbacks of the prior art which utilized only a single cantilever support beam as discussed in the BACKGROUND ART section. This is, this particular arrangement of features helps suppress the influence of viscous resistance of gases in association with a vibratory member, and to enhance angular velocity detection sensitivity. *See* col. 2, lines 35-57.

The Official Action asserts that KARATO and HASEGAWA disclose all the limitations of independent claims 1 and 2 except for the particular configuration of the detection springs as generally recited in claim 2, but that it would have been obvious to one having ordinary skill to provide alternative configurations of the detection springs without departing from the scope of the invention and not necessarily limited to such a shape.

In this regard, it is respectfully submitted that both KIM and HASEGAWA fail to disclose or render obvious at a gyro sensor including at least two detection springs each

extending from said detection mass body in only one direction along said support base plate so as to support said detection mass body relative to a support base plate in a cantilever manner and having flexibility in a displacement direction of a detection mass body, wherein respective distal ends of said at least two detection springs are connected to one another continuously and integrally through a coupling segment, said coupling segment having an intermediate portion fixed to said support base plate, as generally recited in amended independent claim 1. It is submitted that this particular recited configuration is not merely an obvious design choice of shape. That is, the configuration of the detection springs allows the driven mass body 11 and the detection mass body 12 to be displaced relative to the fixing segment in the X-direction. *See* specification page 32, lines 7-11.

That is, KIM fails to disclose or render obvious at least detection springs extending in only one direction supporting a detection mass body in a cantilever manner at an intermediate fixed portion. First and second springs 261, 262 extend in all directions as seen at least in Fig. 9 and Fig. 10, and certainly these springs do not support a detection mass body in a cantilever manner. Furthermore, HASEGAWA fails to cure the deficiencies of KIM. In this regard, HASEGAWA actually teaches away from providing a singular cantilever arrangement, and thus one of ordinary skill would not look to HASEGAWA to modify KIM to provide for such an arrangement. *See* col. 2, lines 35-57. Moreover, modifying the structure of KIM would render the patented invention unsuitable for its intended use. More specifically, the structure of the KIM device allows the device to detect and change the capacitance of the horizontal sensing electrode. *See* col. 6, lines 35-39. Thus modifying the springs 261, 262 would

negatively affect the ability of the device to detect and change capacitance of the horizontal sensing electrode.

It is further submitted that the Examiner has failed to make a prima facie case of obviousness. More particularly, the Examiner has at least failed to generally show two detection springs each extending from the detection mass body that are flexible in a displacement direction of the detection mass body, wherein respective distal ends of the detection springs are connected to one another continuously and integrally through a coupling segment, said coupling segment having an intermediate portion fixed to the support base plate. The references do not appear to provide any evidence to teach or render obvious at least this limitation. Moreover, the Examiner has failed to clearly articulate a reason for arriving at this obviousness-based conclusion or provided any reason for that matter for making the modification. In other words, the Examiner has merely provided a conclusory statement that the arrangement of the springs of the present invention would be obvious in view of KIM and HASEGAWA. This conclusory statement, alone, is inappropriate for a rejection under §103. Therefore, for at least the abovementioned reasons, it is respectfully requested that the obviousness rejections be withdrawn and the allowability of independent claim 1 be indicated.

With respect to the Examiner's rejection of dependent claims 3-16, Applicants submit that these claims are dependent, either directly or indirectly, from allowable independent claim 1, which is allowable for at least the reasons discussed *supra*. Thus, these dependent claims are also allowable for at least the reasons discussed *supra*. Further, all dependent claims set forth a further combination of elements neither taught nor suggested by any of the references of record.

Thus, for each of the above-noted reasons and certainly for all of the above-noted reasons, it is respectfully submitted that the Examiner's rejections are inappropriate and improper. Accordingly, Applicants respectfully request reconsideration and withdrawal of each of the outstanding rejections together with an action indicating the allowability of all the claims pending in the present application. Such action is respectfully requested and is now believed to be appropriate and proper.

SUMMARY

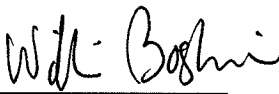
Applicants submit that the present application is in condition for allowance, and respectfully requests an indication to that effect. Applicants have argued the allowability of the claims and pointed out deficiencies of the applied reference. Accordingly, reconsideration of the outstanding Official Action and allowance of the present application and all the claims therein are respectfully requested and is now believed to be appropriate.

Applicants note that this amendment is being made to advance prosecution of the application to allowance, and should not be considered as surrendering equivalents of the territory between the claims prior to the present amendment and the amended claims. Further, no acquiescence as to the propriety of the Examiner's rejection is made by the present amendment. All other amendments to the claims which have been made in this amendment, and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Should the Examiner have any questions, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully Submitted,
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Attachment: Replacement Sheet of Drawings

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